



THE

# EXPERIMENT

No. 4

LIGHT...LEAN...LETHAL

Sept. 13, 2000

## Ryan visits JEFX '00

*Chief of Staff declares  
air operations center  
new weapons system*

By Tech. Sgt. Stefan Alford  
*JEFX Public Affairs*

**HURLBURT FIELD, Fla.** — The Air Force officially has a new weapons system.

After three years of experimentation, Air Force Chief of Staff Gen. Michael Ryan announced that the air operations center is now an integral part of how the service will prepare for and conduct future expeditionary operations.

"I declare the AOC as an official weapons system today," Ryan said after a visit here Sept. 8 to view the air operations center during Joint Expeditionary Force eXperiment '00.

JEFX, a two-week event that runs through Sept. 15, assesses Air Force expeditionary operations through the use of new technology and capabilities in a simulated warfighting environment that combines live-fly forces, models, simulations and technology insertion at 11 sites across the United States to explore and evaluate new processes.

The air operations center at Hurlburt is the hub for all of the information flow involved in the experiment. It simulates a forward command and control structure that plans and directs the air campaign using intelligence, surveillance and reconnaissance, and initiatives such as agile combat support and time-critical targeting. In essence, it is a forward-deployed war room — light, lean and lethal.

During a real-world operation, the AOC will be the "eyes, ears, hands and legs of the commander," said Ryan.

"In each of our theaters, the ability of the air commander to execute the missions he has depends on the capability to have an air operations center that (can be tailored) ... for the mission he needs to do," the chief of staff explained.

As an integral component of the aerospace power



Photo by Senior Airman Lee Rogers

**Gen. Michael Ryan gets a briefing in the air operations center.**

equation, Ryan said the next step in the process is to identify the specialty codes, training pipeline, career path and currency requirements associated with the AOC as a weapons system.

"We need a baselining of the capabilities in that weapons system, just as we do in our capabilities in something like an F-16," said the Air Force's senior leader. "(In the F-16) we have a crew chief that knows how to maintain it and we have pilots that know how to fly it. We have to have the same concept for our air operations centers.

"We have to have those who know how to rapidly set it up and we must have operators who are very familiar with it," Ryan said.

That's where experimentation such as JEFX comes in. This year's experiment is the third in a series since 1998 designed to meet the evolving needs of the Expeditionary Aerospace Force of the 21st century and to implement Joint Vision 2020.

**See AOC, Page 3**

# JEFX execution ends, assessment continues

By 2nd Lt. Paula Kurtz  
JEFX Public Affairs

**HURLBURT FIELD, Fla.** -- As the execution portion of Joint Expeditionary Force eXperiment '00 winds down, the work is just beginning for Lt. Col. Dan Bryan, deputy director of assessments for the experiment.

Bryan is responsible for compiling the final assessment report on the experiment, and for preparing the briefing to be presented to Air Force Chief of Staff Gen. Michael Ryan sometime in December.

"Each initiative is assessed against pretty strict criteria," said Bryan, who also served as the deputy assessment lead for JEFX '99.

"The goal of this experiment was to try to look into the future and say which of these initiatives will bring improved combat capabilities to the warfighter, and make recommendations to the chief on which systems to field," said Bryan.

Throughout each spiral and during the execution portion of the experiment, Bryan led a team of 165 technical experts from across the Air Force and the civilian sector. The team included members

from the Electronic Systems Center and 46th Test Squadron at Eglin AFB, the Air Force Operational Test and Evaluation Center, Air Force Research Lab, and Aerospace Command and Control & Intelligence, Surveillance, and Reconnaissance Center.

In addition, members from the joint staff, major commands, and civilians from the Rand Corporation also participated.

"We brought in a team of people who were experts in their area to build an assessment plan and provide the right tools to facilitate the assessment," Bryan said. "But the best information is really going to come from the warfighters, because they are the ones who are really using the products."

The warfighters in this experiment are the men and women in those specialties that would normally establish and run a Combined Air Operations Center during a major theater conflict.

Their job in this case, however, is to test the new initiatives in their area of expertise rather than concentrating on winning the "war" simulated for the experiment. That change in mindset is one of the biggest hurdles that both players and assessors have



Photo by Staff Sgt. Wayne Clark

## Air check

Army Sgt. 1st Class James Jernigan analyzes readings from a system designed for early detection and warning of biological and chemical agents in the air. The Chemical/Biological Aerosol Warning System is being tested as a JEFX '00 initiative at Indian Springs Air Force Auxiliary Field, Nev. The system provides commanders with instant information they can use to send warnings to troops in the field.

had to overcome.

"It's difficult to bring a bunch of warfighters into this kind of scenario and tell them it's not important to win the war," said Maj. Garry Van der Veer, senior offensive duty officer for the combat execution division. "There are

going to be frustrations when a new system doesn't work as well as you'd like. There's obviously the temptation to go back to doing it the way that you know works."

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## THE EXPERIMENT

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# Improving air mobility support

## *En route mission planning allows for mid-air redirects*

**By Staff Sgt.  
Cortchie Welch**  
*AMC Public Affairs*

**SCOTT AIR FORCE BASE, Ill.** — Exploring agile combat support and dynamic battle control capabilities in a distributed collaborative environment for military forces around the globe.

That's the goal of Air Mobility Command's Tanker Airlift Control Center during the Air Force's Joint Expeditionary Force eXperiment '00.

JEFX '00 is giving TACC personnel an opportunity to explore and assess new and emerging technologies and operational concepts designed to improve air mobility support for the warfighter.

"The experiment is the perfect method to employ or insert new technology into warfighting scenarios. It allows operator involvement early in the develop-

ment and acquisition process," said Lt. Col. Scott Weaver, chief of the integration division at the TACC and the center's lead planner for JEFX '00. "We want to capitalize on technology and find better ways to employ air mobility forces to deploy and sustain expeditionary forces."

Several global mobility initiatives are being showcased in the TACC that support strategic and theater airlift, tanker, and aeromedical operations planning and execution.

Information for Global Reach—IFGR—is AMC's overarching initiative concept that uses datalink communications between the TACC and air mobility aircraft. IFGR exploits all available military and commercial communications assets to provide intelligent, flexible and cost-effective connectivity for deployed AMC operations.

The IFGR-Care-In-The-Air initiative, conducted from the TACC, explored the processes

and technologies necessary to support the near real time exchange of patient status and care needs while en route to and from ground air evacuation stations and medical facilities.

AMC expanded its mobility '00 efforts started in JEFX '99 to revolutionize command and control of air mobility forces via the IFGR-Expeditionary Integrated Flight Management initiative.

Weaver said the initiative is focused on three key capabilities: enhancement of computer automated aircraft route planning capabilities, real-time electronic submission of flight plans to Air Traffic Control organizations for approval and filing, and dynamic re-tasking of simulated and live-fly aircraft.

He said the major joint initiative in support of both Air Force and Army experimentation objectives during JEFX '00 is the IFGR-En route Mission Planning and Rehearsal System. The Army identified an operational need for the ability to conduct mission re-planning and rehearsal while en route to an objective area.

In JEFX '00, a live battalion

air drop was conducted where 11 C-130s transported elements of the 82nd Airborne Division from Pope Air Force Base, N.C., to a drop zone in Louisiana. During the en route portion of the flight, changing events in the planned drop zone caused the Army mission commanders to change their battle plan. These changing ground events required the air-drop package to be retargeted to a new set of coordinates via datalink messages from the TACC to the lead C-130 aircraft.

"The IFGR technology in this initiative also compressed a large picture of the drop zone image into a smaller file transmitted over various communication paths," Weaver said. "A 271 kilobyte image of the new drop zone with 'threat' info was compressed and chunked into three five kilobyte packets to the lead C-130."

He said JEFX '00 was a very ambitious and dynamic experiment with the TACC operators, planners and communicators, providing the expertise and innovation that made AMC's global mobility initiatives a success.

## **AOC** (Continued from Page 1)

Air Force planners here view experimentation as a discovery process. They are quick to differentiate it from the traditional military exercise, saying the service experiments to learn and exercises to train. In other words, military exercises hone established procedures to do them more efficiently, while experiments assess those procedures and new ideas that may become procedures.

Experimentation for the Air Force has always been important, said Ryan.

"We always have to be on the cutting edge because it's the leading technology that we leverage for our aerospace capabilities," said the chief of staff.

"In this case (with the AOC), what we're looking at is the command and control area to make sure that we can move in transformation around and do it in an efficient and effective way. Inviting commercial people to come in (at JEFX) and show us what they have, allows us to interface with them and tell them what we need.

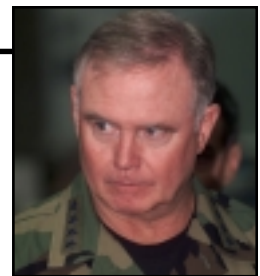
"It allows our bright, young people to be able to do some real creative things," he added, "so it's important to us. It's about our future."

That future involves an Air Force that will continually reshape itself to deploy forward with the smallest possible footprint

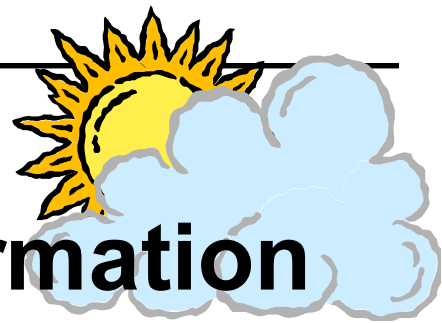
in terms of equipment and personnel.

"We're an expeditionary force," said

Ryan. "We'll be expected to be expeditionary as far as I can see in the future. As far as our vision takes us to 2020, I see no lessening on the demand for us to move forward rapidly and to be able to execute very quickly. To do that, we need to get light and lean ... this is critical to the very nature of the business we do."



**Gen. Michael Ryan**



## *Weathering the change*

# Timely weather information crucial to military operations

By Paige Rowland  
and Judi Tull

*JEFX Public Affairs*

**OFFUTT AIR FORCE BASE, Neb.** -- Weather has been both friend and foe to the men and women who have waged war.

Gen. Dwight D. Eisenhower was one of the first to leverage military meteorology on the battlefield when launching the invasion that would be the turning point during World War II.

In that war, and every other military engagement since, military weather personnel have strived to stay one step ahead of the weather.

On today's battlefield, war planners require rapid mobility and the immediate exchange of information. To meet those needs, timely and accurate weather information has become crucial.

The Joint Weather Impacts System is designed

to not only provide weather information for situational awareness, but also to influence and enhance the decision processes that occur throughout the Expeditionary Air Force.

"With JWIS, we can use weather to our advantage rather than react as we have had to do



Photo by Senior Airman Lee Rogers

**Maj. T.J. Borland tracks real-world tropical storm Florence in the Hurlburt Field, Fla., Combined Air Operations Center on Tuesday.**

in the past," said Maj. T.J. Borland, Chief of New Technologies, Air Combat Command Directorate of Weather.

JWIS will automatically integrate weather databases into Air Force mission planning systems.

**"We can use weather to our advantage rather than react as we have had to do in the past."**

*Maj. T.J. Borland*

program will support operational and tactical level planning, decision making, mission rehearsal, and training.

"The nice thing about it (JWIS) is that it provides real-world, minute-to-minute information for planning and execution," said Col. Bill

McGill, division chief for the AC2ISRC/A4.

For instance, the JEFX '00 scenario included simulated enemy chemical attacks on U.S. forces. Real-world weather information from the battle arena was used to produce a chemical downwind message.

Using that message, the Joint Warning and Reporting Network rapidly integrated and assessed the impact of the weather information and passed it to the decision makers.

"We were able to do all this faster than was ever possible before," said Borland.

JWIS provides weather information 24 hours a day, in six-hour blocks. Since weather information is constantly and readily available, JWIS operators can immediately alert troops to take

necessary protective action or avoid an area altogether.

Previously, weather information had to be sought out and entered manually, so assessments and alerting could not be done as quickly, according to Tech. Sgt. Scott Durbin, JWIS operator.

"JWIS brings weather information into the hands of the people who need it," said Col. Michael Hemler, logistics branch chief.

JWIS can support geographically separated workcenters requiring specialized weather information. As an example, beddown planners will get different information for their purposes than weapons planners would get.

In addition, vital weather information is provided right to the warfighter. JWIS can show pilots, with its infrared target simulations, what a particular target will look like at a given time, and can advise them of the best angle of attack on a target.

The challenges faced by meteorologists are identifying what decision makers, planners and operators are looking for and what weather information they need to complete their mission. JWIS puts weather into every phase of a military operation.

"There have been quite a few initiatives that have greatly exceeded our expectations (during JEFX '00). JWIS is one of them," said McGill.



**Senior Airman Christopher Gomez, 621st Air Mobility Operations Squadron, McGuire Air Force Base, N.J., installs an extended time slot interface card into a basic access module.**

Photo by Senior Airman  
Lee Rogers

## ***Air Mobility Command provides comm support***

**By Tech. Sgt. Stefan Alford**  
*JEFX Public Affairs*

**HURLBURT FIELD, Fla.** — Most folks probably don't sit around during a thunderstorm hoping that lightning will strike their sensitive and expensive electronics equipment.

But that's just what the 621st Air Mobility Operations Squadrons communications flight from McGuire Air Force Base, N.J., did last week — and they got what they were hoping for when mother nature accommodated them by knocking out power strips and fuses.

It was a real-world test that couldn't be simulated in any laboratory environment, and it gave the communications team a chance to validate their new protective measures if such an incident took place in an operational setting.

"Our telephone guys learned a lot about additional protection from lightning strikes using shielded cables and new grounding methods," said Capt. Ken Wilson, chief of the Network Control Center-Deployed at Joint Expeditionary Force eXperiment '00. "We never had this opportunity where we've had all

these thunderstorms, so it was very beneficial."

That experiment was just one of the initiatives the 45-member Air Mobility Command team of active-duty, reservists and civilians looked at during JEFX.

"We also got good experience in new ways to extend our fiber optic connectivity between different systems by converting the signals from regular wiring to fiber optics and then back to wiring at the receiving end," said Staff Sgt. Paul Ernest, a satellite communications transmissions specialist from the 621st AMOS.

The squadron deployed to Hurlburt to set up the entire communications architecture and support for the Combined Air Operations Center. That process involved laying down more than 10.5 miles of communications cables to 12 facilities throughout Hurlburt's JEFX compound.

Among the capabilities they provided the participants were a secret internet protocol router network, a nonsecure IPRN, e-mail connectivity, Defense Switched Network telephone access (both secure and nonsecure), commercial telecommunications, satel-

lite communications links, video teleconferencing, global broadcast system, predator unmanned aerial vehicle imagery and local area network (LAN) and worldwide internet connectivity.

To do all that, members of the team have been here since April working 6 days a week, 12 hours a day setting up in support of the JEFX.

"Basically, we provided all of the communications infrastructure for the CAOC," said Wilson. "A lot of the network stuff we dealt with was in new technologies and different ways of implementing it."

For JEFX, the 621st AMOS also tested and assessed initiatives for the Deployable Consolidated Air Mobility Planning System and the Time-Phased Force Deployment Data (TPFDD)-in-an-Hour. Both of these initiatives allow the Air Mobility Division in the CAOC to more efficiently support the Joint Task Force commander.

Other AMC communications personnel came from Travis AFB, Calif.; Seymour-Johnson AFB, N.C.; Davis-Monthan AFB, Ariz.; and Mountain Home AFB, Idaho.

# Army helps coordinate warfighting

*Detachment aids in synchronizing air campaign, ground maneuvers*

By Karl Eschmann

605th Test Squadron (AFC2TIG)

**HURLBURT FIELD, Fla.** — It's early in the battle and coalition forces are poised to defend their ally after a neighboring country invaded its' territorial border. Coalition forces are outnumbered as U.S. ground forces continue to deploy into the country to join the fight.

In the meantime, coalition airpower is busy taking the fight to the enemy to help turn the tide. All that's left is to coordinate these activities to ensure that the best and most lethal of our military forces are directed at the enemy, on target and on time, without hurting friendly forces, duplicating efforts or wasting resources.

In the fast-paced execution of scenarios such as the one described above, someone has to represent the interests of the ground component commander to see that the air campaign and the ground maneuver efforts are fully synchronized.

The Army's 1st Battlefield Coordination Detachment ensures this is accomplished.

The 1st BCD personnel in Joint Expeditionary Force eXperiment '00 work in the Combined Air Operations Center to help synchronize air and ground efforts during combat operations.

## Coordination

"They do this by coordinating the Army's requests for targets in support of what they are doing on the ground, and exchanging intelligence information to help all the air components keep track of the effects they have on the enemy," said Lt. Col. Al Mrozek, 1st BCD commander.

"This is no easy task, especially as the pace of combat operations increases," added the detachment's operations officer, Capt. Van Zander. "Our equipment gets more sophisticated, and technology grows by leaps and bounds. We are using the Air Force's new col-

laborative tools to coordinate and execute all planning and operations activities, something we never had before in real world operations."

The 1st BCD's mission in this year's experiment is to assess the effectiveness of tools which were designed to increase the interoperability between services and speed up the synchronization of joint targeting.

## Participants

This is being accomplished with the joint interoperability initiative, through the efforts of the Joint Precision Strike Demonstration project office at Fort Belvoir, Va. The project is also supported by the Electronic Systems Center, Hanscom AFB, Mass, and contractors from Lockheed and Raytheon, who produce the Air Force's Theater Battle Management Core System and the Army's Battle Command Systems.

Also participating is the Army's 18th Airborne Corps, which supplied people to man the Army Deep Operations Coordination Cell white cell functions. The DOCC and Army forces provided the means to track the continuous overall battle situation throughout the experiment — a critical function in managing efforts to attack the enemy where it would hurt the most.

The Army detachment was distributed throughout the AOC to integrate its functions with the Air Force processes. The BCD helped develop the strategy and guidance functions with their Air Force counterparts as they planned out Army targets for the next day's air tasking orders.

The combat operations section, responsible for execution of each day's tasking orders, was led by Zander. He and Mrozek participated in the daily situation and decision briefings to keep the combined forces air component commander abreast of the ground situation and the ground component commander's priorities in the ground battle.

The busiest members of the BCD

ops section were the time-critical targets personnel.

Sgt. 1st Class Lonnie Calloway was the operator of the Advanced Field Artillery Tactical Data System and was responsible for forwarding Army TCT targets from the DOCC to the TCT cell at Nellis Air Force Base, Nev.

Using newly developed interoperability tools, he was able to send Army requests electronically without having to re-key any target information. The target information was then coordinated through the TCT processes for eventual weapons pairing and prosecution of the target using air power assets.

## Scenario play

An example of the operational utility was demonstrated multiple times during JEFX. At times, the enemy would activate mobile SA-10 surface-to-air missile sites over the battlefield, trying to take air superiority away from the coalition forces. The best weapons to deal with this enemy threat were the Army Tactical Missile System's surface-to-surface missiles. Through the use of these collaborative tools, they could quickly identify "hot" batteries and have a missile in flight only minutes after the threat popped up as a validated target.

The ability to use the right weapons in the joint environment in a timely way supported the coalition effort to maintain air superiority and pound enemy forces into submission.

"The ability to move so much information in near real time to all the key nodes and systems, in every dimension of what's become a very complicated battlefield, is no easy task," Mrozek said. "We have to do everything possible to get all the information we can and provide it to everyone who might need it to get this very important job done between all the joint partners in a theater. JEFX provides a good environment for proving out some new and valuable interoperability improvements between the services."



Photo by Senior Airman Lee Rogers

**Capt. Rex Miller (kneeling) and Robert Maxwell assess targets for an air tasking order.**

## From data to intelligence

By 2nd Lt. Paula Kurtz  
*JEFX Public Affairs*

**HURLBURT FIELD, Fla.** — Carrying out the scenario developed for JEFX—or any real-world scenario for that matter—could be compared to piecing together a jigsaw puzzle. There are many pieces of information, and the challenge lies in deciphering which pieces are important and where they need to go.

Much of that responsibility falls to the experts in the Intelligence, Surveillance and Reconnaissance division of the Combined Air Operations Center.

“We collect inputs from all sources in the experiment and process the information into decision-quality information for the commander,” explained Maj. Juan Berrios, joint intelligence preparation of the battlespace officer.

Generally, the processing of this information takes place within three cells in the ISR division. The TPED cell takes care of the tasking, processing, exploitation and dissemination of information.

“We make use of all of the sources of information that are available to us,” explained Capt. Kelly Catchings, ISR campaign planner. “Whether it’s a ground-, air-, or space-based system, we have the ability to task the

assets we own or coordinate with national-level agencies to gather any kind of information we need to give the commander an accurate picture of the situation and predict what the bad guys might do.”

In many cases acquiring the needed information means working with the larger intelligence gathering agencies in the Department of Defense, such as the Central Intelligence Agency, Defense Intelligence Agency, National Security Agency, or National Imagery Mapping Agency, among others.

“If there’s certain information we need—say photos of a certain geographical area, for example—and none of these agencies have it, they can task a satellite to get it for us,” Catchings explained.

If the information can be obtained through aerial reconnaissance and surveillance assets, such as the U-2, RC-135, or Unmanned Aerial Vehicles such as the Global Hawk or Predator, Catchings and her team can task the sensors on those platforms for the information.

Once the data is collected, it is made accessible to Berrios’s team in the analysis/fusion cell, where the data is compiled and evaluated for its strategic and tactical value. After Berrios has assigned a value to the information, it is handed off to the Combat Plans division, which integrates functional and sis-

ter service representatives, to include ISR members, pilots, and command and control members, who build the air tasking order.

In addition to the TPED and analysis cells, there is also an ISR cell dedicated specifically to targets. It focuses on the analysis of complete target systems, either through the collection and analysis of raw data or data collected by other intelligence agencies. A target system, as Berrios explained, could be the enemy’s ability to produce oil. ISR targeteers will look in-depth at that entire production capability—from the location, layout and capabilities of refineries, to the distribution methods, ports and railways used to move it.

“Before the commander decides on a target, he needs to know everything about that system and the advantage gained through destruction of its various components,” Berrios said. “Targets are ultimately selected based on the information we provide and our forecast of the enemy’s next move.”

For purposes of this experiment, ISR members working in the CAOC are mostly Air Force and are working one 12-hour shift. If this were a real-world contingency, there would be as many as three shifts shared by Army, Navy, Marine and coalition intelligence gatherers. And according to Berrios, things would move pretty fast and furious.

“The best way to describe it is controlled chaos,” Berrios said. “It’s critical that we integrate the processes and systems used by the various services and establish some common protocols.”

For that reason, in addition to playing their usual role during this experiment, the ISR division is testing some initiatives of its own, designed to improve the management of information and reduce collection time.

One initiative involves ISR interaction with the National Imagery Mapping Agency. In the past, ISR requests for global geospatial products—maps and photos of specified geographical areas—took days and sometimes weeks to process. The new initiative would give ISR troops access to existing national-level information and analysis in a matter of hours, according to Berrios.

“Everything is moving toward speed in the realm of information management,” Berrios said. “The quicker we can access and assimilate information, the sooner the commander can make the decision, and we can execute the tasking. Reducing the decision-making time will definitely give us an advantage in future conflicts.”

**New &  
improved**

# Demos provide glimpse of possible future operations

By Tech. Sgt. Stefan Alford  
*JEFX Public Affairs*

**H**URLBURT FIELD, Fla. — Not all of the gee-whiz gadgetry and cutting-edge technology at Joint Expeditionary Force eXperiment '00 is actually "in play" at the Combined Air Operations Center here.

Some of it is so new or scarce that only a few prototypes exist. These demos are still waiting to be approved and funded as possible initiatives for the military to test during future experiments.

In the meantime, these high-tech wares are on display next to the CAOC in the Cat 3/4 trailer for current JEFX participants and senior military officials to look at, learn about and comment on.

There are seven initiatives on display by military agencies, support contractors and commercial companies, such as the U.S. Air Force Research Laboratories in Rome, N.Y. and Wright-Patterson Air Force Base, Ohio; Raytheon Systems Company; MITRE; Boeing; and Veridian Engineering.

"This stuff is growing technology that's not quite ready to be applied in the field, but it shows us what's coming up and gives the warfighter a chance to provide feedback (to the vendor) directly on what they need before (it's finalized and put in the field)," said 2nd Lt. Marjorie Quant, an assessor for two of the new initiatives.

**A**mong the demos is an audio coding transmission monitor that sounds like something more suited to the X-Files than this year's joint experiment. It boasts the capability to intercept enemy communications, automatically recognize and translate the language, identify which two parties



Photo by Senior Airman Lee Rogers

**Paul Ratazzi explains the capabilities of the Ultra Comm multi-mode communications system to Maj. Mark Terry.**

are talking, and track the transmission links.

Another innovation in the communications field is the Ultra Comm module, designed to interface previously incompatible military radio systems so they can talk to each other.

These small modules resemble fax/modem PCMCIA cards used in laptop computers and allow the user to communicate across all military channels, depending on which module is inserted and how the system is configured. For example, an Army special operations unit on the ground can use their radio equipment to speak directly to an Air Force pilot flying overhead.

"This also allows a Joint Task Force commander in the air operations center to speak directly to any of his assets in the theater with a touch of a button," Raytheon Advanced Systems Program Manager Chris Le told a group of senior military leaders touring the displays.

Le hopes to "sell" the concept to the Department of Defense to get the funding to actually make the product. It's so new, he says, that the prototype on display here was just completed in June. Like a good businessman, he's touting the joint interoperability angle of the equipment in relation to the cross-services information flow vital to JEFX.

**O**ther displays hoping to win Air Force approval include a "virtual room" to create three-dimensional environment in which to run and interact with software applications; intelligence analyst software to help warfighters, mission planners and decision makers quickly find and extract only the information they need from multiple on-line sources; and a Solar Orbit Transfer Vehicle to deploy, recover and service space-based assets.

All of the demos will be on display through Thursday.

# Force protection initiatives combine systems

By Staff. Sgt. Lori Wise  
*JEFX Public Affairs*

**INDIAN SPRINGS AIR FORCE AUXILLIARY FIELD, Nev.** – Innovative technology and ideas designed to enhance medical care and force protection for troops deployed to forward locations are taking agile combat support for the expeditionary aerospace force to a new level.

Force protection initiatives being tested here during Joint Expeditionary Force eXperiment '00 seek to enhance forward warfighter capabilities through improved situational awareness, faster reporting and alerting in a high-noise battlefield.

Several force protection and medical systems that were originally designed to work separately are being integrated to see how efficiently they work together.

The Combat Support Command and Control System combines overhead imagery, sensor systems and advances in computer technology to provide a computer-based situational awareness tool.

The CSC2 connects the Force Protection Base Defense Operations Center and some combat support functions to the wing-level Survival Recovery Center. Experimentation is also happening with a subsystem of CSC2 known as the Personnel Alerting and Warning System. The PAWS notifies deployed personnel in high-noise areas about force protection threats and chemical or biological hazards.

The CSC2 and PAWS were developed through the



Photo by Staff Sgt. Wayne Clark

**Capt. Margie Bleu, an emergency medical technician, enters the patient medical treatment of Master Sgt. Rob Mills on a hand-held Global Expeditionary Medical System or "GEMS" computerized database.**

sponsorship of the Force Protection Battlelab. The data provided by these initiatives is forwarded to the Global Combat Support System – Air Force program, and the Joint Rear Area Operations Center responsible for rear area defense in the deployed area of operations.

According to those who are deployed to the "forward" location, and those receiving the information from Indian Springs in the Nellis AFB-based expeditionary operations center, the combined systems' potential is great.

"We're testing some connectivity issues that must be addressed prior to these systems being used in an operational environment," said Capt. Hunter Sawders, USAF Force Protection Battlelab, Lackland AFB, Texas. "But these issues should be resolved within an

estimated 12 to 18 months."

Users of the CSC2 software system include medical staff, civil engineering, security forces and intelligence.

The system provides information for emergency medical response, disaster preparedness and airfield assessments. Commanders viewing the information in near real-time can benefit from better battle management, decision-making and planning, said Sawders.

The Chemical/Biological Aerosol Warning System designed by Lockheed Martin provides early remote detection for monitoring the perimeter of key military areas and assets. The CBAWS also monitors wind speed, direction and location data.

"This system provides leaders with the ability to protect troops from contamination, and it is functioning well so

far," said Army Sergeant First Class James Jernigan, readiness specialist with the Maneuver Support Battlelab, Ft. Leonard Wood, Mo.

"It's user-friendly and mobile and makes our job in forward locations much safer," he added. "It's a proactive system rather than a reactive one."

Also being tested with CBAWS is the PAWS software, which monitors what the chemical and biological sensors in the field are recording.

This instant information can be used by the commander to send out an alert warning to troops in the field who are carrying pagers linked to the system. The pagers vibrate and send text messages to the troops in high-noise environments, signaling them to put on their MOPP equipment and giving them more time to prepare.

This capability can dramatically influence recovery of sortie rates following a chemical or biological attack. The biological aerosol warning reduces impact from hours to minutes.

Medical initiatives are also combining data collected via Hyperspectral Imaging detection and CBAWS for assessment of medical care improvements. The medical team can locate water supplies on computerized maps and take samples of suspected contamination for testing.

The medical team is also looking at integration of telemedicine, known as "Doc in a Box." It is a videoconference transmission from the forward location that can link paramedics in the field with doctors based farther

**See FORCE, Page 10**

# Cyber war unites adversaries

By Capt. Jason Decker

JEFX Public Affairs

**HURLBURT FIELD, Fla.** -- The strategy and tactics of warfare have been around for centuries, since long before Sun Tzu codified "The Art of War."

Recently, however, a new kind of warfare is emerging without regard for classic concepts like mass and maneuver.

Joint Expeditionary Force eXperiment '00 is on the leading edge of that new warfare -- cyber war -- and is taking steps to improve how America experiments and exercises on this new front.

During JEFX, for the first time ever, the friendly Blue Team members worked hand-in-hand with the opposing force, the Red Team, according to Maj. Michael

Gregory, Network Operations and Security Center -- Deployed commander.

"This set-up put us in a more experimental mindset, instead of 'us versus them,' explained Gregory. "It provided training for both Red and Blue Team members, plus information on systems to build stronger defenses. We shared a common goal -- fortifying our vital worldwide network access."

Experiments focused on network operations as well as space and electronic warfare.

Prior to each test, the Blue and Red Teams met with leadership to go over plans and expectations for each day's tests.

The opposing teams then sat at adjoining tables and communicated throughout each test.

The Red Team replicated an outside

enemy trying to access and bring down coalition networks. The Blue Team countered and everyone learned about how the tools worked, what test items looked like on the networks, and how effective counter-measures were.

The teams then sat down and did a hotwash to ensure all lessons learned were captured and documented.

"And they NEVER cracked our network," added Gregory, with a smile.

This team approach did more than just help the future of network defense operations.

"Some procedures developed here during the experiment were used immediately to help with real world events," said Gregory.

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## Force (Continued from Page 9)

away.

Another software program, The Global Expeditionary Medical System, provides computerized data from medics in the field to doctors and commanders in other locations. The GEMS lets medics enter forward battle-field charting information on hand-held devices, to include casualties, critical care status, triage categories, names of patients, poisoning, airborne illness symptoms, and need for reinforcements.

The GEMS computer laptop provides medics with treatment protocol, medical checklists, databases of sensors being analyzed and medical surveillance.

The Wide-area Surveillance Thermal Imager, or WSTI system is being tested in conjunction with medical sensors to see if chemical or biological plume clouds will show up on the thermal picture.

"It's a great tool. The picture allows a commander to make quick decisions on how to handle situations from a security standpoint," said Tech. Sgt. Derrick Moniz, 820th Security Forces Group, Lackland AFB.

"All of these parts and pieces of systems that work separately don't give us answers, but when we combine them together, we can see the big picture and get those answers," said Lt. Col. Jim Swaby, Force Protection Battlelab, Lackland AFB.



Photo by Senior Airman Lee Rogers

### Adding a stripe

**Gen. John P. Jumper, Air Combat Command commander, congratulates Venis M. Adams after STEP-promoting her to technical sergeant in the Combined Air Operations Center Sept. 7. The Stripes for Exceptional Performers program lets Adams sew on the rank effective immediately. Adams is chief of personnel from Det. 2, 605th Test Squadron at Melbourne, Fla.**

# Integrating space-based effects for learning

By Senior Airman  
Paul Grove  
30th Space Wing

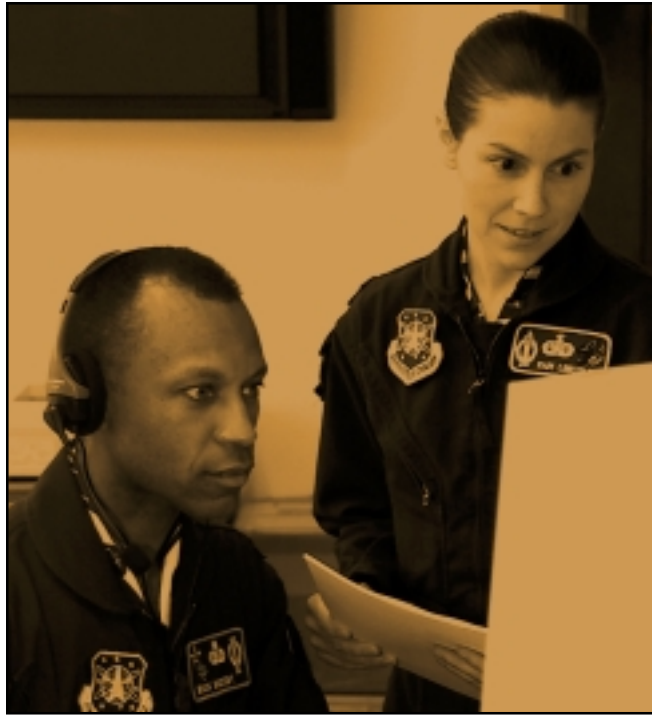
**VANDENBERG AIR FORCE BASE, Calif. --** Forward thinking is a trademark of Air Force operations, and it's on display during Joint Expeditionary Force eXperiment '00.

The primary objective of JEFX '00 is to assess future air force operations using technology and capabilities in a simulated warfighting environment.

The lessons learned from the experiment will ultimately improve the way the Expeditionary Aerospace Force operates in the 21st Century.

"In the 21st Century, the nation has gained an aerospace force – the full integration of strategy, planning and ops execution of our air and space assets within the Combined Air Operations Center for JEFX and future theater operations around the globe," said Col. Suzanne Vautrinot 614th Space Operations Group commander. "This is a tribute to the vision of leadership and daily commitment of every airman."

The SPACEAF Aerospace Operations Center (the Air Force space component to U.S. Space Command) here is playing an integral role in the experiment by demonstrating various command and control relationships while employing tomorrow's weapons systems, according to Vandenberg's Maj. Pamela Lincoln, 9th Space Operations Squadron chief of



U.S. Air Force Photo

**Lt.Col. Eric Mosby and Maj. Pamela Lincoln view the progress of their space-based initiatives during JEFX.**

space strategy and tactics.

According to Lt. Col. Eric Mosby, 14th Air Force deputy director of plans and programs, Air Force Space Command deployed numerous personnel to JEFX in-

cluding a senior space lead, space strategist and operators into the CAOC at Hurlburt Field, Fla., and its counterpart at Nellis AFB, Nev.

"These personnel, in conjunction with the SPACEAF

AOC providing reachback, are integrating space-based effects into the operations center," Mosby added.

The CAOC simulates the command and control structure that plans and directs the air campaign by integrating space effects provided by SPACEAF space systems to include intelligence, surveillance and reconnaissance.

The job of integrating space assets becomes even more noteworthy with the Sept. 8 announcement by Air Force Chief of Staff Gen. Michael Ryan that Air Operations Centers are official weapons systems.

"The SPACEAF staff and AOC crews have put tremendous effort into planning and executing JEFX," said Lincoln. "This experiment gives us the opportunity to integrate air and space operations as well as see where we can improve the way we do business. We're looking forward to using the lessons learned to make us more effective."

## Teams (Continued from Page 10)

He cited an example. In an experiment scenario, the Blue Team encountered satellite problems and worked around them to continue the mission. The next day, real-world weather imitated the scenario, but the team simply switched to ground-based communications and continued working.

Gregory was quick to point out that the example also shows the scope of the NOSC-D's work.

The Blue Team was comprised of people from 8th Air Force and the Red Team came from the Air Force Information Warfare Center and the newly formed Space Aggressor Squadron of the Space Warfare Center.

Two liaisons from the Information Warfare Flight were also embedded in the NOSC-D to provide coordination and links to the Combined Air Operations Center floor. The IWF could then keep the Combined Forces Air Component Commander informed of network events and activities.

The NOSC-D had links to JEFX operations at Nellis Air Force Base and Indian Springs, Nev. In addition, they were able to interact with the Air Combat Command NOSC at Langley AFB, Va. and the Air Force Computer Emergency Response Team at Kelly AFB, Texas.

This allowed monitoring of real world events and enabled the team to keep up with the latest tools and defenses available.



Photo by Staff Sgt. Wayne Clark

### **Battlefield info**

Maj. Chris Veronin, Space Warfare Center, Schriever Air Force Base, Colo., explains the unique capabilities of the HyperSpectral Imaging (HSI) sensor system to SWC Deputy Commander, Col. Robert Ryals. In the background, Capt. Mark Edens, Space & Missile Systems Center, Los Angeles AFB, Calif., communicates via phone with the aircraft providing the imagery. The HSI sensor data is generated by the Seabass aircraft as it flies over a forward battlefield. Its data is received by systems in the mobile Eagle Van trailer that record, process and analyze the information, then transfer it electronically to the Time-Critical Targeting Cell.

## **Assess** (Continued from Page 2)

"But it's important that we're able to make the shift to the experiment mindset if we're going to advance the CAOC as the weapons system of the future," Van der Veer said.

Bryan agreed, saying, "We're not evaluating the people, we're assessing the performance of the process and technology initiatives. You don't get a grade here like in a regular exercise."

"However, the outcome of this experiment will be only as good as the people who are participating," he continued. "And they have to be willing to think outside the box and try new things if we're going to build an expeditionary force to go forward as light as it can, but still maintain the lethal-

ity to prosecute the war."

Although assessment has been a constant part of the experiment via web surveys, observations, interviews and debriefs, Bryan will also conduct several "hotwash" sessions with various groups of experiment players in the weeks following the experiment. Cell leads, thread leads and senior officers working in each division will each have an opportunity to provide detailed information on how each of their initiatives fared.

The final report may be a while in coming, but current assessments already point to a varying degree of success in every thread of the experiment.

"The experiment has been suc-

cessful in what it's trying to accomplish," said Van der Veer. "Not all of the processes and tools we're testing will be incorporated into a future Air Operations Center, but they are spawning other new ideas and improvements. The tools we're using are good and we'll definitely see improvements down the road."

Bryan agreed, saying, "This JEFX has highlighted many requirements our CAOC will need if it's going to be the weapon system of the future. We've done some good, ground-breaking work, and the experiment has definitely proven its worth through some discoveries that will be very beneficial."